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der the advice of England, for the relief of Emin Bey. The Belgian papers state that his route will be up the Kongo to Arouhuimi (the tributary referred to above), which empties into the Kongo near the equator, some distance below Stanley Falls. Mr. Stanley, on his last visit to the Kongo, sailed up this river for some distance, and believed it to be the outlet of the Wellé. From the head of navigation on the Arouhuimi, the route is east to Wadelai. Only about two hundred miles are said to be unexplored. The country is inhabited by peaceful negroes, food is easily obtained, and difficulties are less than by the other route.

A cable from England states that Mr. Stanley will sail for Zanzibar, and go directly to Albert Nyanza, through Massai Land; but we may well doubt this information, for although Mr. Stanley, in crossing the Dark Continent, went by Victoria Nyanza, he took a route south of the one now proposed; and he is much better acquainted with the Kongo route. It is possible that Mr. Stanley may sail to Zanzibar, remain there long enough to procure kroomen and porters, and sail with them to the Kongo, and thence up that river to the Arouhuimi.

The need of Emin Bey for relief appears from his letter, dated, Dec. 31, 1885, received in England Oct. 28. This letter brings the only news received<sup>1</sup> from him in three years. He writes that he almost despairs of receiving succor from the north, for he has heard nothing from Cairo or England since April, 1883; that he is without stores and clothing; and that his ammunition is nearly exhausted. With the enthusiasm of a scientific man, he adds that he has worked with ardor at the formation of a grand collection, chiefly zoölogical, including skulls of the different tribes of negroes and of the chimpanzee, skeletons of various animals and two of the Akka of different sexes; and he will endeavor to complete it during his sojourn there. He promises to keep his post as long as possible, trusting, that, if Egypt still governs the Soudan, she must send relief in time. If the Soudan has been abandoned, he will move southward with his troops, until he is relieved by the government or has placed his people in safety. "With the exception of the human skulls, I have saved all my collection, and will not abandon them until the last. Formerly I received two or three times a year letters and newspapers. Alas! it is so no longer. I strive by every means to sustain my own courage and that

of my people. God has certainly protected and sustained me hitherto, and I have confidence, that, with his help, all will go well in the future."

He adds, "I have secured for — a collection of shells from Lake Albert, which I will send by the missionaries at Uganda, and which I hope will reach him safely. — EMIN BEY."

#### STANDARD TIME AND MEASURES.

AT the recent annual meeting of the American metrological society, letters were read from W. F. Allen, secretary of the general time convention, and from Sandford Fleming of Ottawa, Canada, from which, as they contain considerable information, we quote somewhat liberally below.

Mr. Allen stated that he is at present engaged in quite an extensive correspondence with a view to bringing about the adoption of standard time by those cities which still adhere to local time. This movement has already resulted in success in two instances. In Belfast, Me., eastern time was adopted on Dec. 15, 1886, the clocks being set twenty-four minutes slow; and in Pittsburg, Penn., where an ordinance was passed adopting eastern standard time from Jan. 1, 1887, when the clocks were set twenty minutes fast. It is probable that the legislature of Maine will pass a law at its coming session making eastern time the standard for the state. Correspondence with the superintendents of public schools in a number of the cities of Ohio has developed the fact that a strong feeling in favor of the adoption of standard time exists in that state, from which favorable action is likely to come in the near future. The twenty-four o'clock scale is in use upon the Canadian Pacific railway west of Winnipeg, upon the Manitoba and north-western railway, and upon the Idaho division of the Union Pacific railway. It is proposed to adopt it soon on all the divisions of the Union Pacific railway. Under instructions from the general time convention, Mr. Allen is preparing, and will shortly issue, a circular asking the views of the leading railway officials on the subject of the general adoption of this scale for employees' time-tables and advertisements.

Mr. Fleming bore especially on the benefits to be derived from the twenty-four hour system, which has been put in practice on at least two thousand miles of railway. For the past six months the railway stretching from Lake Superior through Canada to the Pacific coast has been operated on the twenty-four hour system. "The towns and villages along the line," writes Mr. Fleming, "have with great unanimity accepted the change, and

<sup>1</sup> Since this article was written, we have read another letter from Emin Bey, dated July 7, 1886, and then his province was in complete safety and order. These letters show that the necessities of life are not wanting; but how long he can maintain himself depends upon the strength of the Mohammedan army under the new mahdi on the north, and of the army of the negroes from Uganda on the south.

not a single voice has been heard in any quarter expressing a desire to return to the old usage. So satisfactory in every way has the new system proved, that the Canadian Pacific railway company have decided to extend its application eastward to Ontario and the valley of the St. Lawrence. The branch and connecting lines are following the same course, and I am assured that by the end of next year the twenty-four hour system will be in common use by the railways from Halifax in Nova Scotia to Vancouver on the Pacific coast. You are, no doubt, already aware that the twenty-four hour system is in use throughout the extensive lines of telegraph between Great Britain, Egypt, India, South Africa, China, and Australia and New Zealand."

However important these changes are, they can only be viewed as provisional steps in the general unification of time throughout the world. They are means to an end, and the great end of the movement may be the universal adoption of a new notation of time which will be common to all nations. It is only step by step, and by familiarizing men's minds with the new ideas, that the larger reform can be accomplished. With this end in view, the Smithsonian institution, desiring to co-operate in the movement, have agreed to publish and circulate, in all countries where their reports are sent, a paper on 'Time-reckoning for the twentieth century.'

"This question," continued Mr. Fleming, "has an educational interest; and, such being the case, much could be done by appealing to the educational institutions. Probably the most effective means of influencing the rising generation of this country would be to bring the subject under the notice of the public schools. If the children of both sexes were taught the true principles of time-reckoning, in a very few years their influence would be felt, and the main obstacle in the way of adopting a common notation would disappear throughout this continent. I venture to suggest, therefore, that the society would in the highest degree advance the important movement by taking such steps as may be deemed necessary and proper, to bring the question to the notice of the superintendents of education in each state with the view of reaching each boy and girl of school age between the two oceans. If America takes the lead in this matter, I do not doubt that the other continents will follow in good time."

The society would be pleased to correspond with any one desiring to use his influence in bringing about the adoption of the metric system, or who is interested in a common method of time-reckoning such as is indicated in Mr. Fleming's letter.

The office of the secretary is at Columbia college.

The officers for 1887 are, president, F. A. P. Barnard, president of Columbia college; vice-president, Prof. E. N. Horsford, Cambridge, Mass. recording secretary, Melvil Dewey, librarian Columbia college; corresponding secretary, Alfred Colin, New York; treasurer, Prof. J. K. Rees, Columbia college.

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#### THE NATURALISTS' MEETING AT PHILADELPHIA.

THE meeting of the Society of naturalists held in Philadelphia during Christmas week was attended by about fifty members, and proved an enjoyable and stimulating gathering. The strict enforcement of the rule limiting membership to persons "who regularly devote a considerable portion of their time to the advancement of natural history," allows only a slow growth to the society, but it insures the illumination of the association by its members, rather than the reverse. Mutual acquaintance is increased; the meetings become as informal as meetings may be; and the naturalist, who has spent a good part of the year too much alone in his own company, finds suggestive intercourse with his fellows. The constitutional object of the society is chiefly the discussion of *methods* of investigation and instruction; for it is held that the announcement of the *results* of investigation finds more fitting and sufficient opportunity in local societies. But in the present day of special investigation there is some danger that the detailed description of methods, useful in their place, and entertaining enough to a few members, may still fail to hold the attention of the meetings as a whole; especially when, as too often appears, the inventive specialist has failed to cultivate the art of presentation.

The day that was devoted to methods of teaching was apparently the most satisfactory to the gathering. H. S. Williams of Cornell spoke on general instruction in geology; Davis of Harvard followed on instruction in geological investigation. In the afternoon, Farlow of Harvard considered the lines profitable for botanical investigation in the United States. Martin of Johns Hopkins discussed collegiate teaching of biology, and Whitman of Milwaukee described the proper position of biological investigation in the university. All these papers awakened the meeting to active discussion, and it was decided that the executive committee of the society should consider the advisability and means of publishing the proceedings of the day; for it was generally agreed that both the papers and the discussion that they ex-